Lead/Acid Batteries for Tier II Reporting in North Dakota

Why is it important to report lead/acid batteries on a Tier II Inventory report?

Lead/acid batteries pose a substantial risk to the community at large and to emergency responders in a fire or other emergency. It is important to note that the sulfuric acid contained in these batteries has been listed by the U.S. Environmental Protection Agency (EPA) as an Extremely Hazardous Substance. Such listings are based on the following three criteria assessed by EPA:

- Widespread usage (sulfuric acid is the most widely used industrial chemical in the United States);
- High toxicity (sulfuric acid as a liquid or a mist is an extremely corrosive and poisonous material that is also water reactive and a possible cause for fires); and
- Wind dispersion (sulfuric acid can be readily spread by the wind either as a mist or as vapors from a liquid).

In addition, the following federal and state laws require you to notify state and local emergency planners if your facility stores hazardous chemicals above specific reporting thresholds:

- The federal Emergency Planning and Community Right-to-know Act (EPCRA), Sections 311 & 312.

These laws require covered facilities to submit a chemical inventory called a Tier Two report to state and local emergency planners in order to fulfill the notification requirement. In addition, emergency planners rely on Tier Two chemical inventories to develop risk-based emergency response plans. In other words, a facility must report the presence of batteries and sulfuric acid in quantities above Tier Two reporting thresholds because:

- This information has to be communicated to emergency planners and responders so that the proper types of protective gear and equipment can be used in any emergency responses that might involve batteries.
- State and federal laws require facilities to report the storage of significant quantities of hazardous chemicals.

Common Names and Locations for Lead/Acid Batteries

Some common names used to describe lead/acid batteries include: *storage cell, wet cell, gel cell, starved electrolyte cell, absorbed electrolyte cell, flooded cell, sealed cell, Valve Regulated Lead-Acid (VRLA), and maintenance free.*

These batteries may commonly be present in emergency power backup systems which are used for work areas containing communications equipment, computers (including personal computers), emergency lighting, and similar equipment. Batteries are also commonly found in vehicles (including cars, trucks, forklifts, motorcycles, etc.).

Reporting Batteries on the North Dakota Tier Two Report

Owners/operators whose facilities have lead/acid batteries are required to determine whether Tier Two reporting thresholds are exceeded:

- The reporting threshold for pure sulfuric acid is 500 pounds. *(The calculation for the weight of the pure sulfuric acid in batteries appears below, but all sulfuric acid at a facility must be included in determining if the reporting threshold is exceeded.)*
- In addition, if the weight of all of the reportable batteries exceeds 10,000 pounds, then these batteries must be listed on the Tier Two report separately from the sulfuric acid.

Owners/operators should survey all facility equipment and systems containing reportable* batteries to determine whether the reporting thresholds are exceeded for:

- the total weight of pure sulfuric acid contained in all of the reportable batteries, and
- the total weight of all of the reportable batteries.

**See Exemptions to determine if batteries are reportable (not exempt) from Tier Two reporting.)*

To determine if thresholds are exceeded, you will need specific information regarding the *weight of the battery*, the *percent of electrolyte* contained in the battery, and the *percentage of sulfuric acid* present in the electrolyte solution. This information can usually be obtained from the battery manufacturer or supplier, the battery label, or the Material Safety Data Sheet (MSDS) for the battery.

To determine the total weight of pure sulfuric acid contained in a battery, use the following calculation:

The Weight of the Battery
X % Electrolyte in Battery
X % Sulfuric Acid in Electrolyte
= Weight of pure Sulfuric Acid

Research indicates that the quantity of sulfuric acid in batteries varies from one brand to another. The weight of electrolyte in batteries may range from 10- 45% of the total weight of the battery, and the weight of sulfuric acid in battery electrolyte ranges from 20-40%.

If the percentage or concentration of electrolyte is not available for your battery brand, you may estimate the weight of sulfuric acid using the following formula:

Weight of reportable batteries
X 0.18
= (Estimated) Weight of pure Sulfuric Acid

For example, if your facility has several reportable batteries with a total weight of 5,000 pounds, then an estimate of the total weight of pure sulfuric acid contained in the batteries is:

5000 lbs.
X 0.18
= 900 lbs.

In this case scenario, your facility WOULD be required to report the sulfuric acid (since the weight of pure sulfuric acid has exceeded the 500 lb. threshold), but would NOT be required to report the batteries (since the weight of the batteries did not exceed the 10,000 lb. threshold).

Please note that if a threshold is exceeded at any time during the year, the materials which exceed the threshold must be reported.

Exemptions

There are certain circumstances under which lead/acid batteries may not be reportable on the Tier Two report. The exemptions that may apply to batteries are as follow:

Consumer Product Exemption

To meet this exemption, the battery must meet EITHER of the following criteria:

- must be used for only personal, family, or household purposes at the facility; OR
- must be labeled in accordance with the regulations of the Consumer Product Safety Commission (CPSC) and be packaged (prior to installation) for sale to consumers.

In general, the following types of batteries are not consumer products (i.e., not available to the general public) and therefore are not covered by this exemption:

- large batteries in a building (such as those used for power backup systems for telecommunications, computer systems, and lighting)
- large batteries in electric forklifts

Batteries in vehicles may be covered by the exemption if they meet either of the two criteria. For a facility that has a fleet of vehicles, the exemption can be met if the batteries are bought from a manufacturer who sells the same product to the general public (i.e., who meets the CPSC labeling requirements). Small batteries in personal computers and other office equipment will also usually meet the criteria for the exemption. However, if either of the criteria is not met, this exemption does not apply.

Transportation Exemption

To meet this exemption, the battery must be in the process of being shipped to another location. The Transportation exemption only applies to materials under active shipping papers, and therefore does not apply to batteries installed in vehicles.

For further assistance on this issue, contact:

North Dakota Department of Emergency Services
Division of Homeland Security
Hazardous Chemicals Preparedness & Response Program
(800) 773-3259 (toll free in North Dakota)
(701) 328-8100, FAX (701) 328-8181

Our staff will be glad to offer any advice or assistance related to filing Tier Two reports in North Dakota.